Claims

1.A biochip, consisting primarily of one or several dieplates and one or several substrates with or without probe immobilized, and comprising a maximized number of reactors, wherein:

a. said maximization of reactor number is performed by minimizing structure-covered area on the substrate and/or maximizing effective area on the substrate, wherein said structure is partition structure of the reactor and/or structure other than the reactor; and

b. said partition structure is characteristically based on surface partition, hydrophobic surface partition, or height-difference partition.

2.The biochip of Claim 1, wherein said dieplate and said substrate are connected to form one or several closed flow reactors with inlet and outlet.

3.The biochip of Claim 2, wherein:

a. said connection between said dieplate and said substrate is either reversible or irreversible;

b. said reversible connection, dis-connectable when desired, is performed with one or more following forces:

a). mechanic force generated by gravity, elasticity, screws or fixture;

b). magnetic force generated by magnet or electric magnet;

c). removable adhesion force produced by adhesive; and

c. said dieplate is partial or entire machine-eliminable, when it is desired to open or/and to lower height of said reactor formed by said irreversible connection.

4.The biochip of Claim 1, wherein said partition structure including concave structure.

5. The biochip of Claim 4, wherein said concave structure contains one or more of the following flow-controlling structures:

a. hydrophilic material layer;

b. hydrophobic material layer;

c. layer of water-absorbing material based on capillary actions; and

d. leading ditches, leading trough, leading strip helpful for flow-controlling.

6. The biochip of Claim 1, wherein:

a. said dieplate and said substrate are connected by adhesion to form multiple open reactors; and

b. said partition structure presents a height of more than 0.7mm.

7. The biochip of Claim 6, wherein said partition-structure presents a height of more than 1.0mm.

8. The biochip of Claim 6, wherein said partition structure is either eliminable or height-deductible through removal of said adhesion or by mechanic action, wherein:
a. said removal is performed with one or more following actions:
a). physical chemistry action of swelling and dissolving with water or/and organic solvents;
b). physical action of ultrasonic wave; and
c). mechanic action;
b. said mechanic action includes grinding, cutting, whittling, or their combination.

9. The biochip of Claim 1, wherein:
a. said dieplate and said substrate are connected to form multiple open reactors with special outlet region; and
b. said partition structure is on the dieplate, wherein:
a). said partition structure presents a height of less than 1.0 mm; and
b). said partition structure is more hydrophobic than said substrate.

10.The biochip of any in Claims 6-9, wherein:
a. said substrate presents a width of less than 20mm when two or more rows of reactors are formed on a substrate; or
b. said substrate presents a width of less than 9 mm when only one row of reactors are formed on a substrate.

11. The biochip of any one in Claims 6-9, wherein said reactor is strip-shaped reactor.

12. The multi-reactor-biochip of any one in Claims 6-9, wherein said partition structure presents a height of more than that of parts or all of other structure on the biochip.

13. The multi-reactor-biochip of Claim 12, wherein said other structure includes scanning-reference-plane on the same plane as the substrate plane with immobilized probes.

14. The biochip of any one of Claims 6-9, wherein:
a. the area of said biochip is bigger than that of said substrate; and
b. parts or all of inlet structures or/and outlet structures of said reactor are set on dieplate region where said dieplate goes beyond said substrate.

15. The multi-reactor-biochip of any in Claims 6-9, wherein said reactor comprises inlet region and/or outlet region including one or more of the following flow-controlling-structures:
a. hydrophilic material layer;
b. hydrophobic material layer;

c. layer of water-absorbent based on capillary actions; and
d. leading ditch, leading trough, leading strip helpful for flow-controlling.

16. The biochip of Claim 5 or Claim 15, wherein:
a. said hydrophilic material includes:
    a). hydrophilic inorganic material including silicon, aluminum compounds;
    b). hydrophilic organic material including polyacrylamide compounds;
    c). hydrophilic coating; and
    d). natural macromolecular material and its derivatives;
b. said hydrophobic material includes hydrophobic organic material; and
c. said water-absorbent includes:
    a). capillary, paper, membrane with hydrophilic surface; and
    b). porous solid material with fiber or/and hydrophilic inorganic materials.

17.The biochip of Claim 1, a biochip with two effective faces, wherein:
a. said probe is immobilized in said reactors on both top surface and bottom surface of substrate; and
b. structures are symmetrical or asymmetrical on said top and bottom surfaces, mutually.

18. The biochip of Claim 17, wherein said substrate presents a thickness more than 1.0 $\pm$0.1mm.

19. The biochip of any one of Claim 1-18, wherein said substrate is made of any material which can form said reactor with a relatively small average area, including:
a. inorganic material including glass, silicon and silicon compound.;
b. organic macromolecular polymer including polypropylene, polyvinylchloride, polystyrene, nylon and nitrate cellulose ; and
c. organic material coated with metal including gold and silver.

20. A combined biochip, composed of several said biochips of any one of Claim 1-19, wherein :
a. said several biochips are combined through insertion, adhesion and mechanic apposition;
b. its total width is of no less than 25mm; and
c. the number of said biochips combined is changeable as required.